

## 1.0 Purpose and Need for Action

### 1.1 Need for Action

The Bonneville Power Administration, under provisions of the **Pacific Northwest Electric Power Planning and Conservation Act of 1980 (Act)**<sup>1</sup>, is obligated to protect, mitigate and enhance fish and wildlife and their habitats affected by the construction and operation of the federal hydroelectric system in the Columbia Basin, consistent with the Northwest Power and Conservation Council's (Council) Fish and Wildlife Program (2000). Libby Dam, on the Kootenai River near Libby, Montana is part of the federal hydroelectric system, and so BPA has a need to address impacts from Libby Dam on fish and wildlife.

The construction and operation of Libby Dam has changed the Kootenai's flow patterns and also captured nutrients, such as nitrogen (N) and phosphorus (P) that once enriched downstream areas, behind the dam in Lake Koocanusa. Low nutrient levels are believed to be partly responsible for the low productivity of important native fish populations found in the river such as sturgeon, burbot, kokanee, redband trout, whitefish, bull trout, and cutthroat trout. These populations are particularly important to the Kootenai Tribe of Idaho (KTOI), which historically derived about 50-70 percent of its subsistence from the Kootenai River fishery (Scholz, et al. 1985). The Tribe and the Idaho Department of Fish and Game (IDFG) have proposed this project—to add nutrients to the Kootenai River—to help improve productivity of the native species and are seeking funding from BPA for the project to help BPA meet its mitigation obligation for Libby Dam.

This environmental assessment (EA) is being prepared pursuant to the National Environmental Policy Act (NEPA) (42 U.S.C. 4321 *et. seq.*) and the Council of Environmental Quality (CEQ) Implementing Regulations, which require federal agencies to assess the impacts that their proposed actions may have on the environment. Based on information in the EA, BPA will determine whether the proposal significantly affects the quality of the human environment (see Section 4.1).

### 1.2 Background

The Kootenai River is currently nutrient poor and has been so for about 25 years. Although there are other factors influencing fish populations, low nutrient levels are partly responsible for the low productivity found in the river and part of the reason that important fish populations are not doing well. Nutrients that once flowed downriver from Canada are now being trapped in Lake Koocanusa behind Libby Dam. The separation of the Kootenai River from its historic floodplain (downstream of Bonners Ferry, Idaho) has also resulted in fewer available nutrients for river productivity. For example, the last viable white sturgeon year class to recruit to the Kootenai River population was produced in 1974. The burbot population in the Kootenai River has also declined sharply during recent decades; burbot sampling efforts by Idaho Department of Fish and Game (IDFG)

---

<sup>1</sup> Words in bold are defined in Chapter 6, Glossary.

in 1998-99 produced one fish during a 254-hour sampling effort (Paragamian, December 5, 2004).

Nutrient concentrations downstream from Libby Dam have dropped to very low levels. About 63 percent of the total phosphorus and 25 percent of the available nitrogen in the Kootenai River do not pass Libby Dam to enrich downstream reaches (Woods, 1982). Nutrients (especially P) are highly correlated with runoff events (P binds to suspended sediment) and thus the slower flows existing within Lake Koocanusa may cause as much as 95 percent of the sediment and its attached nutrients to settle behind the dam (Snyder, et al. 1996).

Nutrients in the river system stimulate algae growth, which aquatic insects feed on. Fish then feed on the aquatic insects and completes the aquatic food chain. Nutrient declines, therefore, can reduce the health and productivity of affected fish populations.

Through the Council's Fish and Wildlife Program (1994/2000) and with funding from BPA, the Tribe, IDFG, Montana Department of Fish, Wildlife, and Parks (MFWP), and others have been conducting Kootenai River fisheries research. This research has helped develop alternatives for meeting the need to enhance the river ecosystem, including the option of improving nutrient levels. BPA proposes to fund KTOI and IDFG to add liquid nitrogen and phosphorus to the Kootenai River from late June through September each year starting in 2005 to replace nutrients lost to the hydrosystem.

Adding nutrients to an ecosystem has been used successfully in other basins. Some examples:

- At Redfish Lake (Idaho), after nutrients in the form of sockeye salmon were all but eliminated in the early 1990s, the Shoshone-Bannock Tribes in partnership with Idaho Dept. of Fish and Game added nutrients from 1995-1998. As a result, zooplankton biomass increased 31%, sockeye density increased 26%, and Sockeye over-winter survival increased 192% (Griswold, et al. 2003).
- In the Adams River (British Columbia), the British Columbia Ministry of Environment implemented a nutrient restoration program in 1992-1997 to restore native rainbow and introduced brown trout populations. As a result of the nutrient restoration, algae increased up to 10 fold, bottom insects increased, trout densities doubled (not evident until the 3<sup>rd</sup> year of nutrient additions) (Wilson, et al. 1999a).
- In the Kuparuk River, Alaska, nutrients were added from 1983-1986 as a controlled test to determine a tundra river's response to human disturbance. The additions stimulated an increase in aquatic insect growth, as well as an increase in the growth rates of juvenile and adult grayling (Peterson, et al. 1993).
- In 1992, a large scale nutrient restoration program was implemented in the north arm of Kootenay Lake to try to restore declining kokanee populations. Decades of declining fisheries had resulted from major nutrient losses after two major rivers that feed the lake were dammed (the Kootenai and Duncan rivers).

Results of several years of nutrient additions showed an increase in all levels of the food chain (phytoplankton, zooplankton, and fish). The lake experienced an

increase in spawning kokanee from 300,000 in 1991 to 2.1 million in 1998. The lake has not experienced any negative effects from the nutrient replacement activities (Ashley, et al. 1997).

### 1.3 Purposes

The purposes are goals to be achieved while meeting the need for the project. These goals are used to evaluate alternatives proposed to meet the need. BPA will use the following purposes to select among the alternatives:

- Helps BPA fulfill its obligation to protect, mitigate, and enhance fish and wildlife affected by the development of Libby Dam in a manner consistent with the Council's Columbia Basin Fish and Wildlife Program.
- Enhances administrative efficiency and cost-effectiveness.
- Avoids or minimizes adverse environmental impacts.
- Provides the potential to achieve the following biological objectives:
  - Rehabilitates the post-development Kootenai River ecosystem.
  - Rehabilitates the ecosystem to reverse declining trends in native populations of kokanee, burbot, interior redband trout, and ESA listed populations of bull trout and white sturgeon.
- Helps improve a fishery important to the Kootenai Tribe of Idaho, consistent with BPA's general trust responsibility to the Tribe.

### 1.4 Other Planning or Projects in the Area

There are other efforts to improve the Kootenai River Basin that are being implemented or are planned for implementation in the future that could work in concert with this project. These include the following projects and their sponsors:

- Kootenai River White Sturgeon Studies and Conservation Aquaculture (Technical, Labor, and Data Interchange) (KTOI)
- Kootenai River Fisheries Recovery Investigations (Technical, Labor, and Data Interchange) (IDFG and KTOI)
- Reconnection of Floodplain Slough Habitat to the Kootenai River (KTOI) - project to evaluate potential slough sites for reconnection, estimate the ecological benefits, and implement reconnection.
- Implement Floodplain Operational Loss Assessment, Protection, Mitigation, and Rehabilitation on lower Kootenai River Ecosystem (KTOI)
- Mitigation for the Construction and Operation of Libby Dam (Montana Department of Fish Wildlife and Parks [MWFP]) - Implements watershed-based enhancement and fishery recovery actions to mitigate the losses caused by hydropower generation.

- Focus Watershed Coordination in the Kootenai River Watershed (Kootenai River Network and MWFP) - Fosters grass-roots public involvement and interagency cooperation for habitat restoration.
- Assess Feasibility of Enhancing White Sturgeon Spawning Habitat, Kootenai River, Idaho (IDFG; KTOI; U.S. Geological Survey) - project to design scenarios and assess feasibility to enhance white sturgeon spawning substrate.
- Kootenay Lake Fertilization. A large-scale project to restore declining kokanee populations (see Section 1.2) (KTOI).

## 1.5 Public Involvement

In fall 2004, BPA opened a scoping period to the public for this proposal. Scoping refers to a time early in a project when the public indicates what issues to consider in the environmental assessment (EA). A public meeting was held in Bonners Ferry, Idaho on December 13, 2004 to present information about the project, answer questions from the public, and accept comments. About 30 people attended the meeting. Additional scoping comments were accepted through January 28, 2005.

Written comments were received from twenty-two individuals or families. Comments covered many issues. The following is a general list of those issues:

- Location, size and visibility of the nutrient storage tanks and how trucks would access them for filling and how frequently.
- Concerns about the potential contamination of well water from nutrient additions to the river.
- Quantities and types of nutrients proposed as well as scheduling of additions, mixing, and monitoring.
- Concerns about the potential for algae blooms and the wrong kinds of algae.
- Safety measures to prevent nutrient spills at the tanks, the pipe and at the nozzle in the river, as well as cleanup procedures in case of spills.
- Monitoring plans and reports and how it will be determined if the project is a success.
- Mixing zone depth, predicted flow levels and potential harmful effects in the river.
- Current dam operations and how they might affect this project.
- Potential contamination from impurities in the nutrients.
- Concerns about the nutrients causing negative impacts to other living things in the river.
- Consider adding nutrients to other parts of the river.
- Increases in nutrients may not be enough. Consider also floodplain restoration, water quality improvements and simulating historic stream flows.

These and other issues were addressed in the preliminary environmental assessment.

In spring 2005, BPA requested comments from the public on the preliminary environmental assessment. The following eight individuals or agencies submitted comments:

- Brandon Smith, Kootenai National Forest
- Karl Denison, US Citizen
- Cleve Shearer
- Bob Castaneda, Kootenai National Forest
- Mark Ziminske, US Army Corps of Engineers
- Lois Albert
- Robert A. Petrusha
- John Robison, Idaho Conservation League

Copies of the comments submitted are in Appendix A. The comments covered a variety of issues. The following is a general list of those issues. Comments have been responded to with appropriate changes in this final environmental assessment.

- Describe mitigation and safety measures that would assure the security and provide maintenance of the storage tanks and other project facilities.
- Reduce potential fire hazards in the area.
- Concerns about allowing liquid nitrogen into the river.
- Use other options for enhancing fish harvest such as reducing fish harvest; resolving problems with side stream spawning habitat; entrapment of nutrients at Libby Dam; unnatural flows caused by operation of the dam; and water quality.
- Include more discussion of cumulative effects for the various wildlife and fish species and cultural resources, and provide more description of potential impacts to fish species.
- Provide more discussion of which activities are planned for federal versus private land.
- Concerns regarding potential visual impacts.
- Concerns about potential impacts to vegetation.
- Provide information regarding erosion control measures.
- Provide more information about how nutrient additions work in rivers.
- Confirm how the success of the project will be measured.
- Provide more information regarding how far downstream the effects of this project will be realized.
- Expand the project to include adding nutrients at Libby Dam and into Canada.

## 1.6 Related Documents

The following documents are related to this project and are available on request:

- Categorical Exclusion (CX), May 2004. Environmental review of a variety of research activities related to this project.
- CX, April 2005. Environmental review of activities related to pre-construction site preparation.

## 1.7 Decisions To Be Made

BPA is required under NEPA to examine the environmental effects of projects it proposes to fund and to determine whether effects are significant. If they are found not to be significant, a Finding of No Significant Impact (FONSI) would be issued and funding may proceed. If they are found to be significant, an Environmental Impact Statement (EIS) must be prepared before making a decision.

The U.S. Forest Service will decide whether to grant a special use permit for the temporary facilities on the Kootenai National Forest.